MANONMANIAM SUNDARANAR UNIVERSITY, TIRUNELVELI

UG COURSES – AFFILIATED COLLEGES

B.Sc. Food Science & Nutrition

(Choice Based Credit System)

(with effect from the academic year 2017-2018 onwards)

Sem. (1)	Pt. (2)	Sub No. (3)	Subject Status (4)	Subject Title (5)	Contact Hrs/ Week (6)	L (7)	T (8)	P (9)	C (10)
III	I	17	Language	Tamil/Other Language	6	6	0	0	4
	II	18	Language	English	6	6	0	0	4
	III	19	Core- Paper V	Essentials of Macronutrients	4	4	0	0	4
	III	20	Major Practical - III	Essentials of Macronutrients	2	0	0	2	1
	III	21	Allied - II - Paper III	Family Resource Management-I	4	2	2	0	3
	III	22	Allied Practical - III	Family Resource Management-I	2	0	0	2	1
	III	23	Skill Based core paper I	Food Processing and Preservation	4	4	0	0	4
	IV	24	Non-Major Elective-I	Food Preservation Techniques / Diet Therapy-I	2	2	0	0	2
	IV	25	Common	Yoga	2	2	0	0	2
	Subtotal				**30+2**	**24+2**	**2**	**4**	**25**
IV	I	26	Language	Tamil/Other Language	6	6	0	0	4
	II	27	Language	English	6	6	0	0	4
	III	28	Core - Paper VI	Essentials of Micronutrients	4	4	0	0	4
	III	29	Major Practical - IV	Essentials of Macro & Micronutrients	2	0	0	2	1
	III	30	Allied - II - Paper IV	Family Resource Management-II	4	2	2	0	3
	III	31	Allied Practical - IV	Family Resource Management-II	2	0	0	2	1
	IV	32	Skill Based II Core	Food Processing Equipment	4	4	0	0	4
	IV	33	Non-Major Elective-II	Bakery/ Diet Therapy-II	2	2	0	0	2
		34	Common	Computers for Digital Era	2	2	0	0	2
	V	35	Extension Activity	NCC,NSS, YRC,YWF	-	-		-	1
	Subtotal				**30+2**	**24+2**	**2**	**4**	**26**

V	III	36	Core - Paper VII	Nutrition through Lifecycle	6	6	0	0	4
	III	37	Core - Paper VIII	Food Chemistry	6	6	0	0	4
	III	38	Major Elective - I	Food Service Management/ Hygiene and Sanitation	4	4	0	0	4
	III	39	Major Elective-II	Food Microbiology / Principles of Interior Decoration	4	4	0	0	4
	III	40	Major Practical - V	Nutrition through Lifecycle	8	0	0	8	4
	III	41	Major Practical - VI	Food Chemistry					
	IV	42	Skill Based III Common	Personality Development/ Effective Communication/ Youth Leadership	2	2	0	0	2
	Subtotal				**30**	**22**	**0**	**8**	**22**
VI	III	43	Core IX	Dietetics	5	5	0	0	4
	III	44	Core X	Clinical Biochemistry	5	5	0	0	4
	III	45	Core XI	Fundamentals of Baking	5	5	0	0	4
	III	46	Major Elective – III	Fundamentals of Textiles & Clothing/Concepts in Family Relation	4	4	0	0	4
	III	47	Major Practical – VII	Dietetics	4	0	0	4	2
	III	48	Project	Group Project	7	0	0	7	7
	Subtotal				**30**	**19**	**0**	**11**	**25**
Total			**180**		**180+4**	**137+4**	**8**	**35**	**144**

I. Objectives

1. The curriculum offers robust academic and experiential opportunities across the health spectrum to address the health of individuals and populations from prevention to palliation.
2. To divulge theoretical understanding and practical skills that reinforces the various arenas of Food Science and Nutrition.
3. The course is aimed to enable students to gain knowledge about interaction between food, body and health under normal and special circumstances.
4. This course will enable students to use current information technologies to locate and apply evidence-based guidelines and protocols and get imparted with critical thinking to take leadership roles in fields of health, dietetics, special nutritional needs and nutritional counselling. Currently food industry is shifting its focus from taste to nutrition.
5. To expedite the undergraduates of Food Science and Nutrition to pursue higher studies which in turn offer career opportunities and research quests.
6. To apply the skills and knowledge gained through the subject to real life situations and face competitive examinations with self-confidence at National level.

II. Eligibility for Admission

The minimum eligibility conditions for admission to the **B.Sc Food Science and Nutrition** program are given below.

The candidates for admission into the first semester of the **B.Sc Food Science and Nutrition** course will be required to have qualified the Higher Secondary Examination conducted by the Board of Higher Secondary Education, Government of Tamil Nadu or any other Examinations accepted by the syndicate of the Manonmaniam Sundaranar University as equivalent there to in Science subject.

III. Duration of the Course

The students shall undergo the prescribed course of study for a period of not less than three academic years (Six semesters). The semester contains 90 working days.

IV. Elective Subject

One among the two given subjects will be selected.

V. Extension Program for the Department

Apart from the curriculum, to enrich the skill development of the students following courses in their premises are conducted.

Effective Communication

Personality development

Youth development.

VI. Internal Assessment

There is a separate passing minimum for the external and overall components.

Distribution of marks between External and Internal Assessment is

- For Theory 75 : 25
- For Practical 50 : 50

Pass minimum of 40% for external and overall components.

Internal Marks for **Theory** shall be allotted in the following:

The average of the best two from three compulsory tests. Each test is of one hour duration	20 Marks
Assignment	05 Marks
Total	**25 Marks**

Distribution of marks between External and Internal Assessment for Skill Based Elective - 75 : 25.

The average of the best two from three compulsory tests. Each test is of one hour duration	20 Marks
Assignment	05 Marks
Total	**25 Marks**

Internal Marks for **Practical** shall be allotted in the following manner

Experimental Work	25 Marks
Regularity	25 Marks

Total	**50 Marks**

VII. Grading System

The performance of the students is indicated by the seven point scale grading system as per the UGC norms given below.

Grade	Grade Point	Percentage of Marks	Performance
O	9.5 and above	95 – 100	Outstanding
E	8.5 and above	85 – 94	Excellent
D	7.5 and above	75 – 84	Distinction
A	6.0 and above	60 – 74	Very Good
B	5.0 and above	50 – 59	Good
C	4.0 and above	40 – 49	Average
RA	0	Up to 39	Re-Appear

The overall performance level of the candidates will be assessed by the following formulae :

$$\text{Cumulative weighted average of marks} = \frac{\sum(\text{Marks x Credits})}{\sum \text{Credits}}$$

$$\text{Cumulative weighted average Grade Points} = \frac{\sum(\text{Grade Point x Credits})}{\sum \text{Credits}}$$

VIII. Question Pattern

Section	Type of Question	No. of Question	Marks
Part A	Objective Type Questions (Two questions from each unit)	5 x 2 = 10	10 x1= 10
Part B	Internal Choice Questions (One question from each unit)	5 x 1 = 5	5 x 5 = 25
Part C	Internal Choice Questions (One question from each unit)	5 x 1 = 5	5 x 8 = 40
	Total		**75 Marks**

MSU/2017-18/UG-Colleges/Part-III(B.Sc. Food Science & Nutrition)Semester-III / Core

ESSENTIALS OF MACRONUTRIENTS

Objectives: **L T P C**
4 0 0 4

1. To understand the role of nutrition in the maintenance of good health.
2. To study nutritional deficiencies and their prevention.

Unit I

Basic concepts of Nutrition
Relation of good nutrition to normal physical development and sound health **(10L)**

Unit II

Carbohydrates

Classification, digestion, absorption, metabolism, functions, sources and requirements **(12L)**

Unit III

Protein

Classification, digestion, absorption, EAA, metabolism, functions, sources, requirements and deficiency - Kwashiorkor, Marasmus. **(12L)**

Unit IV

Fats (Lipids)

Classification, digestion, absorption, metabolism, functions, PUFA, sources and effects of deficiency. **(12L)**

Unit V

Energy

Definition, energy needs of the body, BMR, factors affecting BMR, determination of energy value - Bomb calorimetry method, determination of energy requirements - Direct calorimetry & indirect calorimetry method, Specific Dynamic Action, determination of energy metabolism during work. **(14L)**

References:

1. Swaminathan, M. Advanced Text Book on Food and Nutrition, BAPPCO, 1985.
2. Shakuntala Manay, N. and M. Shadaksharaswamy, Foods Facts and Principles, New Age International (P) Ltd. Publishers, Second Edition, 2001.
3. Seema Yadav, Basic Principles of Nutrition, Anmol Publication Pvt. Ltd., First Edition, 1997.
4. Robinson, C.H. and Lawler, R.M., Normal and Therapeutic Nutrition, 17th edition Maxmillan Publication & Co., New York, 1994.
5. Sri Lakshmi, B., Dietetics, New Age International Private Ltd., New Delhi, 1995.
6. Mahtab, S. Bamji, Pralhab Rao, R and Vinodhini, Text Book of Human Nutrition, Oxford and IBH Publishing Co. Pvt. Ltd., New Delhi, 1996.

MSU/2017-18/UG-Colleges/Part-III (B.Sc. Food Science & Nutrition) Semester - III / Major practical - III

ESSENTIALS OF MACRONUTRIENTS

Objectives **L T P C**
0 0 2 1

1. To understand the role of nutrition in the maintenance of good health.
2. To study nutritional deficiencies and their prevention.
3. Identify macronutrients and the related chemical or environmental plant deficiencies.

    a. Qualitative test for Sugar
    b. Qualitative test for Proteins
    c. Qualitative test for Fats and Oils
    d. Quantitative estimation of reducing sugar in Fruit Juices
    e. Quantitative estimation of reducing sugar in honey
    f. Quantitative estimation of Proteins
    g. Quantitative estimation of Fats in foods

References :

1. Swaminathan, M. Advanced Text Book on Food and Nutrition, BAPPCO, 1985.
2. Shakuntala Manay, N. and M. Shadaksharaswamy, Foods Facts and Principles, Newage International (P) Ltd. Publishers, Second Edition, 2001.
3. Seema Yadav, Basic Principles of Nutrition, Anmol Publication Pvt. Ltd., First Edition, 1997.
4. Robinson, C.H. and Lawler, R.M., Normal and Therapeutic Nutrition, 17th edition, Maxmillan Publication & Co., New York, 1994.
5. Sri Lakshmi, B., Dietetics, New Age International Private Ltd., New Delhi, 1995.
6. Mahtab, S. Bamji, Pralhab Rao, R and Vinodhini, Text Book of Human Nutrition, Oxford and IBH Publishing Co. Pvt. Ltd., New Delhi, 1996.
7. Manual of Methods of Analysis of Foods – 'Oils and Fats', FSSAI, 2015.
8. Norman Potter and Joseph H. Hotchkiss Food Science, 5th edition, 2002.

MSU/2017-18/UG-Colleges/Part-III (B.Sc. Food Science & Nutrition) Semester III / Allied

FAMILY RESOURCE MANAGEMENT – I

Objectives **L T P C**
2 2 0 3

1. To attain a thorough knowledge of understanding values and goals in house keeping
2. To gain a basic knowledge of planning and constructing a house
3. To understand basic designs and art.

Unit I

Housing

a. Functions of the house and its environment
b. House planning – site selection, factors to be considered, features of a house contributing to livability, orientation, grouping, roominess, lighting and ventilation, storage facility, privacy, flexibility, sanitation and economy
c. Kitchen planning – different types – work triangle
d. House plans – low, middle and high income groups **(6L+6T)**

Unit II

Care and maintenance of house

a. Care and maintenance of house and its surroundings.

b. Daily, weekly and periodical cleaning to keep the house in good condition.

c. Insect and pest control – preventive and remedial measures to be adopted. **(6L+6T)**

Unit III

Elements of Design I

a. Elements of design, types of design, characteristics of a good design, principles of design.
b. Harmony – meaning, types – repetition, contrast, transition
c. Proportion – meaning – means of obtaining good proportion
d. Balance – meaning – types and means of obtaining balance
e. Emphasis – meaning – means of creating emphasis
f. Rhythm – meaning – means of getting rhythm. **(6L+6T)**

Unit IV

Colour

a. Qualities of colour – hue, value, intensity of colours and emotions, advancing and receding colours.

b. How to use colours – proportion, balance, harmony, and rhythm in colour.

c. Use of colour in interior decoration **(6L+6T)**

Unit V

Accessories, Furniture, Flower Arrangement

a. Selection, use and care of accessories, Picture and wall hangings, basic knowledge of flower arrangements – principles, types of flower arrangement.

b. Selection and Use of Furniture – living room, bedroom and dining room – table setting.

(6L+6T)

References

1. Desh Pande, R.S., Modern Ideal Homes for India – United Book Corporations, Poone. 1971.
2. Stella Soundararaj. A Textbook of House hold Arts, Orient Longmans, Bombay, 1968.
3. Margaret Kaye. A. A Students handbook of House wifery, J.M. Dent Sons Ltd., London. 1986.
4. Paulena Nickell, Jean Muir Dorsey, Management in Family Living, Wiley Eastern Private Ltd., 1976.
5. Varghese A. Home Management New Age International, 1985.

MSU/2017-18/UG-Colleges/Part-III (B.Sc. Food Science & Nutrition) Semester III / /Allied Practical - III

FAMILY RESOURCE MANAGEMENT – I

Objectives

L T P C
0 0 2 1

1. To attain a thorough practical knowledge of understanding values and goals in housekeeping.
2. To understand the basic designs and art.
    a) Draw the kitchen plan and house plan for various income groups.
    b) Visit to hotels to obtain knowledge on interior decoration and house keeping
    c) Demonstration of different designs
    d) Demonstration on mixing color
    e) Visit to flower show
    f) Demonstration on different types of flower arrangement, wall hangings, picture
    g) Preparation of time plan for college girl/homemaker and its evaluation.
    h) Determination of working height in vertical and horizontal planes
    i) Study of anthropometry and furniture sizes.
    j) Planning, organizing, implementing and evaluating a group activity (Party/Exhibition/ tour)

References

1. Desh Pande, R.S., Modern Ideal Homes for India – United Book Corporations, Poone. 1971.
2. Stella Soundararaj. A Textbook of House hold Arts, Orient Longmans, Bombay, 1968.
3. Margaret Kaye. A. A Students handbook of House wifery, J.M. Dent Sons Ltd., London. 1986.
4. Paulena Nickell, Jean Muir Dorsey, Management in Family Living, Wiley Eastern Private Ltd., 1976.
5. Varghese A. Home Management New Age International, 1985.

MSU/2017-18/UG-Colleges/ Part III (B.Sc. Food Science & Nutrition) Semester III / Skill based Core - I

FOOD PROCESSING AND PRESERVATION

Objectives **L T P C**
4 0 0 4

1. To understand the principles of food preservation
2. To develop skills for setting up production units
3. To acquire Knowledge of preservation techniques

Unit I

Objectives and principles of Food Preservation **(10L)**

Unit II

a) Low Temperature - Refrigeration, Freezing
b) High Temperature – Canning, Dehydration, Drying. **(14L)**

Unit III

Preservation by use of chemicals – preparation of crush, squashes, synthetic syrup **(13L)**

Unit IV

Preservation by use of sugar – Jam, Jelly, Marmalade, Tuty-fruity **(12L)**

Unit V

Pickling – Principles and methods **(11L)**

References

1. Prakash Triveni, Food Preservation, Aadi publication, Delhi. 2008.
2. Shafiur Rahman. M. Hand Book Of Food Preservation, Marcel Dekker Inc, New York. 2007.
3. McWilliams and Paine, Modern Food Preservation, Surjeet Publication. 1996.
4. Fellows, P and Ellis H. Food Processing Technology: Principal and Practicals, New York. 1990.
5. NPCS Board, Modern Technology on Food Preservation Second Edition, Asia Pacific Business Press, Inc 2012.
6. Sivasankar; B. Food Processing and Preservation, Prentice Hall, India Learning Private Limited 2004.
7. Tanchev, & Stoyan. Methods of Food Preservation. Food Safety: A Practical and Case Study Approach. 2007.

MSU/2017-18/UG colleges/Part III (B.Sc. Food Science & Nutrition)

Semester III / Non-Major Elective - I

FOOD PRESERVATION TECHNIQUES

Objectives **L T P C**
2 0 0 2

1. To understand the principles of food preservation
2. To develop skills for setting up production units
3. To acquire Knowledge of preservation techniques.

Unit I

Objectives and principles of food preservation. **(6L)**

Unit II

c) Low temperature - refrigeration, freezing
d) High temperature – canning, dehydration, drying. **(7L)**

Unit III

Preservation by use of chemicals – preparation of crush, squashes, synthetic syrup. **(6L)**

Unit IV

Preservation by use of sugar – Jam, Jelly, Marmalade, Tuty-fruity. **(6L)**

Unit – V

Pickling – Principles and methods. **(5L)**

References

1. Prakash Triveni, Food Preservation, Aadi publication, Delhi. 2008.
2. Shafiur Rahman. M. Hand Book of Food Preservation, Marcel Dekker Inc, New York. 2007.
3. McWilliams and Paine, Modern Food Preservation, Surjeet Publication. 1996.
4. Fellows, P and Ellis H. Food Processing Technology: Principal and Practicals, New York. 1990.
5. NPCS Board, Modern Technology on Food Preservation Second Edition, Asia Pacific Business Press, Inc 2012.
6. Sivasankar; B. Food Processing and Preservation, Prentice Hall, India Learning Private Limited 2004.
7. Tanchev, & Stoyan. Methods of Food Preservation. Food Safety: A Practical and Case Study Approach. 2007.

MSU/2017-18/UG colleges/Part IV (B.Sc. Food Science & Nutrition)

Semester III / Non-Major Elective

DIET THERAPY - I

Objectives **L T P C**
2 0 0 2

1. To gain insight into the national nutritional problems and their implications
2. To obtain knowledge about the methods of assessment of nutritional status
3. Develop skills in organizing and evaluating nutrition projects in the community

Unit I

Nutrition throughout lifecycle - I

a) Basic principles of menu planning.

b) Nutrition during pregnancy

c) Nutrition during lactation **(6L)**

Unit II

Nutrition throughout lifecycle - II

a) Nutrition during infancy

b) Nutrition during preschoolers

c) Nutrition during school going children **(7L)**

Unit III

Nutrition throughout lifecycle - III

a) Nutrition during adolescents

b) Nutrition during adulthood

c) Nutrition during old age **(6L)**

Unit IV

Concept of diet therapy -II

a) Principles of therapeutic diet

b) Modification of normal diets **(6L)**

Unit V

Deficiency disorders

Nutrition for deficiency disorders – PEM, Anemia and Vitamin A deficiency. **(5L)**

References

1. Sri Lakshmi, Dietetics, Wiley Eastern publishers. 2004
2. Corrine Robinson, and Lawler. Normal and Therapeutic Nutrition, Oxford and IBH publishers. 1990
3. Swaminathan. M. Principles of Nutrition and Dietetics, BAPPCO publishers, Bangalore. 2003
4. Gopalan, Balasubramainan and Ramasastri., Nutritive value of Indian foods, NIN publication, Hyderabad. 1996.
5. Bhavana Sabarwal. Principles and practices of Dietetics, Ajay Verma Common Wealth Publishers, New Delhi. 1999.
6. Davidson Passmore. Human Nutrition and Dietetics, London Churchill and Livingston publishers. 1989.

MSU/2017-18/UG colleges/Part III (B.Sc. Food Science & Nutrition) Semester IV/Core

ESSENTIALS OF MICRONUTRIENTS

Objectives **L T P C**
4 0 0 4

1. To understand the role of nutrition in the maintenance of good health.
2. To study nutritional deficiencies and their prevention.
3. Identify macro and micronutrients and the related chemical or environmental plant deficiencies.

Unit I

Vitamins

History, Chemistry, absorption, functions, requirements, effects of deficiency, Fat soluble Vitamins - A, D, E and K, water soluble Vitamins - C and B complex **(14L)**

Unit II

Major Minerals

Functions, sources, requirements and effects of deficiency of minerals **(12L)**

Unit III

Trace Elements

Functions, sources, requirements and effects of deficiency of trace elements **(12L)**

Unit IV

Interrelationship between nutrients and water balance

a. Interrelationship between carbohydrates, proteins, fat, vitamins and minerals

b. Water balance **(10L)**

Unit V

Enzymes

Enzymes - Classification, factors affecting enzyme action. **(12L)**

References:

1. Swaminathan, M. Advanced Text - Book on Food and Nutrition, BAPPCO, 1985.

2. Shakuntala Manay, N. and M. Shadaksharaswamy, Foods Facts and Principles, Newage International (P) Ltd. Publishers, Second Edition, 2001.

3. Seema Yadav, Basic Principles of Nutrition, Anmol Publication Pvt. Ltd., First Edition, 1997.

4. Robinson, C.H. and Lawler, R.M., Normal and Therapeutic Nutrition, 17th edition, Maxmillan Publication & Co., New York, 1994.

5. Sri Lakshmi, B., Dietetics, New Age International Private Ltd., New Delhi, 1995.

6. Mahtab, S. Bamji, Pralhab Rao, R and Vinodhini, Text Book of Human Nutrition, Oxford and IBH Publishing Co. Pvt. Ltd., New Delhi, 1996.

MSU/2017-18/UG colleges/Part III (B.Sc. Food Science & Nutrition)

Semester - IV / Major practical - IV

ESSENTIALS OF MICRONUTRIENTS

Objectives **L T P C**
0 0 2 1

1. To understand the role of nutrition in the maintenance of good health.

2. To study nutritional deficiencies and their prevention.

3. Identify micronutrients and the related chemical or environmental plant deficiencies.

    a. Qualitative test for Minerals

    b. Quantitative estimation of Vitamin C in Greens

    c. Quantitative estimation of Vitamin C in Lime Juice

    d. Quantitative estimation of Vitamin C in Curds

    e. Quantitative estimation of Calcium

    f. Quantitative estimation of Phosphorus

References

1. Swaminathan, M. Advanced Text Book on Food and Nutrition, BAPPCO, 1985.

2. Shakuntala Manay, N. and M. Shadaksharaswamy, Foods Facts and Principles, Newage International (P) Ltd. Publishers, Second Edition, 2001.

3. Seema Yadav, Basic Principles of Nutrition, Anmol Publication Pvt. Ltd., First Edition, 1997.

4. Robinson, C.H. and Lawler, R.M., Normal and Therapeutic Nutrition, 17th edition, Maxmillan Publication & Co., New York, 1994.

5. Sri Lakshmi, B., Dietetics, New Age International Private Ltd., New Delhi, 1995.

6. Mahtab, S. Bamji, Pralhab Rao, R and Vinodhini, Text Book of Human Nutrition, Oxford and IBH Publishing Co. Pvt. Ltd., New Delhi, 1996.

MSU/2017-18/UG colleges/Part III (B.Sc. Food Science & Nutrition)

Semester IV / Allied - IV

FAMILY RESOURCE MANAGEMENT – II

Objectives: **L T P C**
2 2 0 3

To enable the students to understand the importance of home management in family and personal living.

1. To improve their ability in family resource management.
2. To understand and apply basic principles of art in interior designing.

Unit I

Management

a. Definition and meaning of management – characteristics of a good home maker - management process – planning, organizing, controlling and evaluating.
b. Motivating factors in management – values, goals and standards. Decision making – steps in decision making **(6L+6T)**

Unit II

Resources

a. Resources – classification and characteristics
b. Time and Energy Management – Importance of time management, guidelines in planning time schedule, fatigue - types and overcoming fatigue – work simplification – Mundel's Law. **(6L+6T)**

Unit III

Standard of living

Constituents – factors affecting, causes for low living standards in India. **(5L+5T)**

Unit IV

Money Management

a. Family Income – types, sources methods of augmenting family income.
b. Family expenditure – budget – meaning – types of budget-planning a family budget – steps in planning, advantages of budgeting – Engel's law of consumption.
c. Savings – meaning – need, saving institutions – Bank – Post office – Insurance – Chit fund – Unit trust of India. **(6L+6T)**

Unit V

Consumer Rights and Protection

a. Consumer Rights : The home maker as a wise consumer – rights of a consumer – consumer education –consumer aids – advertisement – standards-labels – price tag.
b. Consumer protection – need – measures adopted to provide consumer protection – consumer laws – consumer courts – consumer movement.
c. Residence course – need, objectives planning, organization and evaluation of the course – role of supervisor and staff adviser **(7L+7T)**

References:

1. Deshpande, R.S. Modern Ideal Homes for India – United Book corporations, Pune, 1971.
2. Paulena Nickell, Jean Muir Dorsey – Management in Family Living, Wiley Eastern Private Ltd., 1976.
3. Van Dommolen, D.B. Designing and Decorating Book, John Wiley & Sons. 1991.
4. Mann, M. Home Management for Indian families, New Delhi Kalyan Publishers. 1980.
5. Stella Soundararaj. A Textbook of Household Arts, Orient Longmans, Bombay, 1968.
6. Margaret Kaye. A. A Students handbook of Housewifery, J.M. Dent Sons Ltd., London. 1986.
7. Paulena Nickell and Jean Muir Dorsey, Management in Family Living, Wiley Eastern Private Ltd., 1976.
8. Varghese A. Home Management, New Age International, 1985.

MSU/2017-18/UG colleges/Part III (B.Sc. Food Science & Nutrition)

Semester - IV / Allied Practical - IV

FAMILY RESOURCE MANAGEMENT – II

Objectives **L T P C**
0 0 2 1

1. To attain a thorough practical knowledge of understanding values and goals in house keeping
2. To understand the basic designs and art.

a. Study of expenditure pattern of your family and preparation of a model family budget/ budget suitable for various categories.
b. Study of waste management practices in your house/locality
c. Development of an art object from household waste materials.
d. Development and evaluation of labels and advertisements for consumer products
e. Preparation of a consumer complaint for any consumer product.
f. Residence stay for a week incorporating principles of management. (A record of the entire practical should be maintained with preliminary preparation report and evaluation report).

References:

1. Desh pande, R.S. Modern Ideal Homes for India – United Book corporations, Pune. 1971.
2. Paulena Nickell, Jean Muir Dorsey – Management in Family Living, Wiley Eastern Private Ltd., 1976.
3. Van Dommolen, D.B. Designing and Decorating Book – John Wiley & Sons. 1991
4. Mann, M. Home Management for Indian families, New Delhi Kalyan Publishers. 1980.
5. Stella Soundararaj. A Textbook of House hold Arts, Orient Longmans, Bombay, 1968.
6. Margaret Kaye. A. A Students handbook of House wifery, J.M. Dent Sons Ltd., London. 1986.
7. Paulena Nickell, Jean Muir Dorsey – Management in Family Living, Wiley Eastern Sons Private Ltd., 1976.
8. Varghese A. Home Management, New Age International, 1985.

MSU/2017-18/UG colleges/Part III (B.Sc. Food Science & Nutrition)

Semester IV/ Skill based –II Core

FOOD PROCESSING EQUIPMENT

Objectives: **L T P C**
4 0 0 4

1. To introduce basic equipment design and various control mechanisms.
2. To enable the student to design and develop equipment used in Food Processing Operations.
3. To identify and discuss critical design of typical processing equipment.
4. To understand the relationship between process design and Safety.

Unit I:

Introduction to Equipment used in Food Industry

Equipment: Types, planning, factors affecting selection and purchase **(10 L)**

Unit II:

Mechanical Equipment

a. Transport equipment: Fluid food transport equipment, mechanical conveyors.

b. Storage equipment: Solid and liquid food storage equipment.

c. Processing equipment: Size reduction, homogenization, mixing and foaming equipment.

d. Separation equipment: Grading and sorting equipment. **(16 L)**

Unit III:

Heat Exchangers, Dryers and Evaporators

a. Heat transfer equipment: Heat exchangers. Food evaporation equipment: food evaporators, evaporator components.

b. Food dehydration equipment – Food dehydration principle, food dryers, hygiene and safety considerations. **(12 L)**

Unit IV:

Refrigeration and Thermal Processing Equipment

a. Refrigeration and freezing equipment: Refrigerants, freezers, chillers.

b. Thermal processing equipment: sterilizers, pasteurizers, blanchers. **(12 L)**

Unit V:

Food Packaging Equipment

Introduction, preparation of food containers, filling equipment, closing equipment, group packaging. **(10 L)**

Reference:

1. Saravacos, George, "Handbook of Food Processing Equipment", Springer Publishing. 2015.
2. Lelieveld, H. L. M. John Holah, David Napper**,** "Hygiene in Food Processing: Principles and Practice", Elsevier Publications. 2014.
3. Sue Azam-Ali, "Small-scale Food Processing: A Directory of Equipment and Methods", ITDG Publishing. 2003.

MSU/2017-18/UG colleges/Part IV (B.Sc. Food Science & Nutrition)

Semester IV / Non-Major Elective II

BAKERY

Objectives: **L T P C**
2 0 0 2

This course will enable the students to

1. understand basic concepts of baking
2. Acquaint with the role of various major and minor ingredients in bakery products
3. Familiarize with baking process and operations.
3. Learn the quality parameters of bakery products

Unit I

Introduction

a. Introduction to baking
b. Principles of baking
c. Equipment needed – ovens, dough mixer and egg beater. **(6L)**

Unit II

Role of ingredients in baking – I

a. Wheat
b. Fats and oils
c. Egg **(7L)**

Unit III

Role of ingredients in baking-II

a. Milk, Sugar, Salt and Water
b. Flavoring agents
c. Leavening agents – physical, biological **(7L)**

Unit IV

Preparation of cakes – rich cakes, plum cakes, pineapple upside cake. **(5L)**

Unit V

a. Cookies – ingredients and mixing methods, types of process
b. Bread rolls. **(5L)**

References

1. Kent.N.L.: Technology of cereals – with special reference to wheat, pergamon Press, New York, USA. 1975.

2. France.W.J: The student Technology of Bread making and flour confectionery, Routledge and Kegan Paul Ltd., London, UK. 1974.

3. Sultan.W: Practical baking manual – for students and instructors, AVI Publishing Co.INC, West Port, Connecticut. 1976.

4. Matz S.A.: Bakery Technology, packaging, nutrition, product development and quality assurance, Elsevier Science Publisher Ltd., New York, USA. 1989.

5. Malik. R.K. and Dhingra.K.C.: Technology of Bakery Industries. Small Industry Research Institute, New Delhi, India. 1981.

6. Pomeraz, Y.: Wheat Chemistry and Technology, Vol. 1 and II American Assn. of Cereal Chemists, 3rd Ed. St. Paul Minnesota, USA. 1988.

7. Matz. S.A. Technology for the Materials of Baking, Elsevier Science Publishers. Baking, England. 1989.

8. Yogambal and Ashok kumar, Theory of Bakery and Confectionary, PHT learning Private Limited, New Delhi. 2009.

MSU/2017-18/UG colleges/Part IV (B.Sc. Food Science & Nutrition)

Semester IV/33/Non-Major Elective II

DIET THERAPY - II

Objectives **L T P C**
2 0 0 2

1. To gain insight into the national nutritional problems and their implications
2. To obtain knowledge about the methods of assessment of nutritional status
3. Develop skills in organizing and evaluating nutrition projects in the community

Unit I

Therapeutic diets for

a) Obesity and underweight

b) Diabetes Mellitus **(7L)**

Unit II

Therapeutic diets for

a) Peptic ulcer

b) Cirrhosis and Hepatitis **(7L)**

Unit III

Therapeutic diets for

a) Atherosclerosis

b) Hypertension **(6L)**

Unit IV

Therapeutic diets for

Febrile condition - Typhoid, TB and Malaria. **(5L)**

Unit V

Therapeutic diets for

Renal failure, Cancer, Burns. **(5L)**

Reference:

1. Sri Lakshmi, B. Dietetics, Wiley Eastern publishers. 2004.
2. Corrine Robinson and Lawler. Normal and Therapeutic Nutrition, Oxford and IBH publishers. 1990.
3. Swaminathan. M. Principles of Nutrition and Dietetics, BAPPCO publishers, Bangalore. 2003.
4. Gopalan, Balasubramaniam & Ramasastri Nutritive Value of Indian foods, NIN publication, Hyderabad. 1996.
5. Bhavana Sabarwal. Principles and practices of Dietetics, Ajay Verma common wealth publishers, New Delhi. 1999.
6. Davidson Passmore. Human Nutrition and Dietetics, London Churchill and Livingston publishers. 1989.

MSU/2017-18/UG colleges/Part I (B.Sc. Food Science & Nutrition) Semester V/ Core

NUTRITION THROUGH LIFECYCLE

Objectives **L T P C**

6 0 0 4

1. To help students to understand the basis of meal planning.
2. To obtain knowledge on various nutritional deficiency disorders.
3. To understand the nutritional needs of members at different age levels.

Unit I

Requirements for infancy and preschool age

a) Infancy – Growth and development, nutritional requirements, breast feeding, weaning practices, diet supplements
b) Preschool age – nutritional requirements, factors affecting nutritional status, problem related to nutrition **(16L)**

Unit II

Balanced diets for school going children and adolescence

a) Balanced diet – meaning, basic principles of meal planning
b) Planning meals for different socio economic conditions – low income, middle income & high income groups
c) School age – nutritional requirements, food requirements, packed lunches, school lunch programmes
d) Adolescence – Nutritional requirements, food habits, fast food, nutritional problems

(20L)

Unit III

Balanced diets for adults, pregnant women, lactating mother

a. Adult – nutritional requirements, food requirements, principles involved in planning of meals.
b. Pregnant woman – Physical changes, nutritional requirements, food requirements, problems related to nutrition, during pregnancy complications & dietary problems
c. Lactating mothers – nutritional requirements, food management
d. Geriatric Nutrition – Process of aging, physiological and biochemical changes, considerations in feeding elderly **(22L)**

Unit IV

Modification of Diet

a. Definition, importance, modification of normal diet – clear fluid, full fluid & soft diet.
b. Tube feeding, parenteral feeding.
c. Pre and post-operative diets **(14L)**

Unit V

Diet for Deficiency conditions

a. Nutritional deficiency diseases – PEM, Vitamin A and Anemia
b. Lactose Intolerance, Phenylketonuria, Alkaptonuria, Galactossemia and Sickle Cell Anemia **(18L)**

Reference:

1. Sri Lakshmi, B. Dietetics, Wiley Eastern publishers. 2004.
2. Corrine Robinson and Lawler. Normal and Therapeutic Nutrition, Oxford and IBH publishers. 1990.
3. Swaminathan. M. Principles of Nutrition and Dietetics, BAPPCO publishers, Bangalore. 2003.
4. Gopalan, Balasubramaniam & Ramasastri Nutritive Value of Indian foods, NIN publication, Hyderabad. 1996.
5. Bhavana Sabarwal. Principles and practices of Dietetics, Ajay Verma common wealth publishers, New Delhi. 1999.
6. Davidson Passmore. Human Nutrition and Dietetics, London Churchill and Livingston publishers. 1989.

MSU/2017-18/UG colleges/Part III (B.Sc. Food Science & Nutrition)

Semester V / Core

FOOD CHEMISTRY

Objectives **L T P C**
6 0 0 4

1. Understand the meaning and chemical preparation of carbohydrates in foods
2. Explain the role of lipids and protein in foods
3. Acquire knowledge on the chemical changes occurring in foods

Unit I

Carbohydrates in Food:

a) Introduction to food chemistry

b) Monosaccharides- structure, properties & derivatives

c) Oligosaccharides- structure, properties & derivatives **(18L)**

Unit II

Carbohydrates in Food:

a) Functions of sugars in foods

b) Polysaccharides and their role in foods **(18L)**

Unit III

Lipids in food

a) Classification and composition
b) Characteristics of fat
c) Functional properties **(18L)**

Unit IV

Functional role of proteins

a) Denaturation of proteins
b) Foam formation of proteins
c) Functional role in foods **(19L)**

Unit V

Functional role of vitamins and minerals

Vitamins and minerals – Functional role in foods and its bioavailability **(17L)**

References:

1. Seema Yadav, Food Chemistry, Anmol Publications Pvt. Ltd, New Delhi 1997.
2. Meyer. L.H, Food Chemistry, common wealth publishers, New Delhi.2001.
3. Srilakshmi. B, Food Science, New Age International (P) Ltd, New Delhi 2002.
4. Shankuntala Manay, Food Principles, New Age International (P) Ltd, New Delhi 2001.
5. Damordaran, S. Parkin, K O. Fennema's Food Chemistry, Fennema Eds. CRC Press. 4th Edition, 2007.
6. David. S. Robinson, Food biochemistry and Nutritive Value. Longman Group, U.K. 1987.
7. Sadasivam.S.A, Manickam, Biochemical methods for agricultural sciences. New Age International Publishers. 1996.
8. John DeMan, Principles of Food Chemistry, 3rd Edition. Aspen Publishers, New York. 1999.

MSU/2017-18/UG colleges/Part II (B.Sc. Food Science & Nutrition) Semester V/ Major Elective - I (A)

FOOD SERVICE MANAGEMENT

Objectives **L T P C**
4 0 0 4

1. Gain knowledge about various types of food service.
2. Understand the principles and functions of management.
3. Realise the importance of sanitation.

Unit I

Origin of Restaurant

Origin of restaurant and commercial food services, Types of institutional food service operation. **(14L)**

Unit II

Management Process

Management and organization - Definition, principles and tools of management. **(14L)**

Unit III

Personnel Management

Recruitment, selection, orientation, training, motivation and supervision. **(15L)**

Unit IV

Financial Management

Book keeping, account maintenance, balance sheet **(14L)**

Unit V

Hygiene and Sanitation

a. Definition and importance of hygiene and sanitation in food handling
b. Personal hygiene
c. Pest and rodent control in food service institutions
d. Causes and prevention of accidents and safety education. **(18L)**

References :

1. Mohini Sethi and – Surjeet Malhan. Catering Management an integrated approach Wiley Eastern Ltd., New Delhi. 2007.

2. Malhotra.R.K. Food Service Management, Anmol Publisher, New Delhi. 2005.

3. Kinton and Ceserani.V. The Theory of Catering, 11th Edition Dynamic Learning Network Edition, Hodder Education, 2007.

4. Peet L, and Thye L. S. 'Household Equipment,' John Wiley and Sons., New York, 1961.

5. Glow G. Edition, 'Catering Equipment and systems Design' Applied Science Publishers Ltd. London 1977.

6. Kotschevar and Terrell, ' Food Service Planning, Layout and Equipment, 2nd Edition, John Willey and Sons, 1997.

7. Unklebay N.S. Unklebay K. "Energy Management in food Service. Ellis Horwood Ltd., England, 1982.

8. Palan E.R. Sc. Steadler, J.A. 'Preparing for the food service Industry- 'An introductory approach" AVI Publishing Co., West Port, 1986.

9. West, B.B., Wood, L., Harger, V.F. and Schugart - Food Service in Institutions, John Wiley & Sons., N.Y., 1972.

MSU/2017-18/UG colleges/Part II (B.Sc. Food Science & Nutrition) Semester V/

Major Elective I (B)

HYGIENE AND SANITATION

Objectives **L T P C**
4 0 0 4

This course will enable the students to –

1. Understand the principles and application of hygiene and sanitation in Food Processing.
2. Develop good habits of personal and environmental hygiene.
3. Learn safe handling of food and ensure complete safety of raw and processed foods.

Unit I

Hygiene

a. Definition of hygiene – its application to everyday life.

b. Personal hygiene. **(10L)**

Unit II
Safe handling of food

a. Personal hygiene including uniform, medical check-up, good food handling habits and training.
b. Control and eradication of flies, cockroaches, rodents and other pests. **(13L)**

Unit III
Disinfection

a. Definition of disinfectant, sanitizer, antiseptic and germicide. Common disinfectants. Use in ease of working surfaces, kitchen equipment, dish washing, hand washing etc.
b. Sterilization of kitchen and service equipment.

c. Sanitizing of watering equipment **(13L)**

Unit IV

Care of premises and equipment

a. Impervious washable floors, walls, table tops, floor etc.

b. Good ventilation and lighting.

c. Care of dark corner, crevices and cracks.

d. Garbage disposal – collection, storage and proper disposal from the premises. **(12L)**

Unit V

Food Adulteration and laws

a. Food adulteration and public health hazards. Prevailing food standards in India – PFA, FPO, AGMARK and BIS.
b. Legal administration and quality control – laws relating to food hygiene. **(12L)**

References

1. Hobbs, B.C. and Gilbert, R.J. Food Poisoning and Food Hygiene, Edward Amold, London. 1970.
2. Rack, B.G: Hygiene in Food Manufacturing and Handling, Food trade press, London. 1974.
3. Longree, K. Blaker, G.G.: Sanitary techniques in food service, John Wiley, New York. 1971
4. Longree. K. Quantity Food Sanitation, 2nd Ed. Inter Science Publishers. 1967.
5. Battershall and P Jesse Food Adulteration and Its Detection. New York: E. & F.N. Spon. 1966.
6. Education Planning Group, Food and Nutrition. Arya Publishing House. Delhi, 1971.
7. Mudambi, S.R and. M.V. Rajagopal, Fundamentals of Foods & Nutrition; Wiley Eastern Limited. 1985.

MSU/2017-18/UG colleges/Part I (B.Sc. Food Science & Nutrition)

Semester V/ Major Elective II – (A)

FOOD MICROBIOLOGY

Objectives **L T P C**
4 0 0 4

1. To instruct students who are having their first experience with microbiology on the nature of micro organisms
2. To outline the source of contamination and their aspects of foods
3. To understand the principles of food preservation
4. To gain knowledge of the methods to prevent contamination.

Unit I

General characteristics:

General characteristics of main group of microorganisms – Bacteria, fungi, yeast. **(10L)**

Unit II

Microorganisms of soil, water, sewage & atmosphere:

a) Soil – Nitrogen cycle, Carbon cycle, Sulphur cycle & Phosphorus cycle
b) Water – methods of water purification, types of microorganisms
c) Sewage – Sewage treatment methods, types of microorganisms
d) Air – microbial pollution, control measures **(13L)**

Unit III

Contamination of Cereals and cereals products:

a) Contamination and prevention of spoilage of cereals and cereals products
b) Contamination and prevention of spoilage of vegetables and fruits **(13L)**

Unit IV

Contamination of milk, fish, meats:

a) Contamination and prevention of spoilage of milk and milk product
b) Contamination and prevention of spoilage of meats, fish and other sea foods

(12L)

Unit V

Contamination of egg and poultry:

a) Contamination and prevention of spoilage of eggs
b) Contamination and prevention of spoilage of poultry **(12L)**

References:

1. Anna .K.Joshua, Microbiology, Popular Book Depot, Madras. 2000.
2. Martein Probisher, Fundamentals of microbiology. Fifth edition. Saunders Publishers. 2007.
3. Goss, R.C., Experimental Microbiology. Guide laboratory, Kalyani publishers. 1995.
4. Frazier, W.C. Food Microbiology, Tata Mc Graw Hill Book Company, Bombay, 1988.
5. Adams, M.R and Moss M.O. Food Microbiology Royal Society of Chemistry, Cambridge, 1995.
6. Banwart, G.T, Baric Food Microbiology CSS Publishers, New Delhi. 1987.
7. Atlas, M.Ronald Principles of Microbiology, 1st Edition, Mosby-Year Book, Inco Missouri, U.S.A. 1995.
8. Frazier, W.C. Food Microbiology, Mc Graw Hill Inc, 4th Edition. 1998.

MSU/2017-18/UG colleges/Part I (B.Sc. Food Science & Nutrition)

Semester V/ Major Elective II – (B)

PRINCIPLES OF INTERIOR DECORATION

Objectives **L T P C**
4 0 0 4

1. To learn the basic principles of art.
2. To develop the skill of applying the principles of art in decorating the house.

Unit - I

Family Housing

a. Need and importance of Housing.
b. Factors influencing selection of site.
c. Factors to be considered for good housing, Ventilation. **(12L)**

Unit- II

Elements of Design :

Design – Definition – Kinds of design. Elements of design line – Direction – Shape, Size, Texture and color. **(13L)**

Unit- III

Principles of Design :

Harmony, Balance, Rhythm, Proportion, Emphasis. **(13L)**

Unit- IV

Use of Color in Interior :

a. Classifications of colors – primary, binary, intermediate, tertiary and quaternary.
b. Qualities of color, Hue value, intensity, Prang color system, color and emotion, use of color in interior decoration. **(12L)**

Unit - V

Furniture selection

Care and selection of furniture in dining room, office, bed room, living room. **(10L)**

References

1. Nickel, P. and Dorsey, J.M. – Management in Family living, Tohn Wiley and Sons, Inc, New York 1986.
2. Varghese and Oglae, Home Management, Wiley Eastern Ltd., New Delhi 1994.
3. Butt, H.H., Home Furnishings, John Wiley and Sons, New York, 1971.
4. Desh Pande, R.S., Modern Ideal Homes for India – United Book Corporations, Pune, 1971.
5. Stella Soundararaj. A Textbook of House hold Arts, Orient Longmans, Bombay, 1968.
6. Margaret Kaye. A. A Students hand book of House wifery,J.M. Dent Sons Ltd., London. 1986.
7. Paulena Nickell, Jean Muir Dorsey – Management in Family Living, Wiley Eastern Private Ltd., 1976.
8. Varghese A. Home Management, New Age International, 1985.

MSU/2017-18/UG colleges/Part III (B.Sc. Food Science & Nutrition)
Semester V/ Major Practical -V

NUTRITION THROUGH LIFE CYCLE

Objectives

L T P C
0 0 8 4

1. To gain deep insight in the basis of meal planning.
2. To obtain practical knowledge on various nutritional deficiency disorders.
3. To understand the nutritional needs of members at different age levels.

i. Basic principles of menu planning
ii. Nutrition during pregnancy
iii. Nutrition during lactation
iv. Nutrition during infancy suffering from low weight
v. Nutrition during infancy suffering from lactose intolerance
vi. Nutrition during preschool age suffering from PEM
vii. Nutrition during preschool age suffering from lactose intolerance
viii. Nutrition during preschool age suffering from anemia
ix. Nutrition during school age suffering from anemia
x. Nutrition during school children suffering from Vitamin A deficiency
xi. Nutrition during adolescence
xii. Nutrition for adult sedentary male and female workers
xiii. Nutrition for adult moderate male and female workers
xiv. Nutrition for adult heavy male and female workers
xv. Nutrition during old age - male and female

References

1. Sri Lakshmi, B. Dietetics, Wiley Eastern publishers. 2004.
2. Corrine Robinson and Lawler. Normal and Therapeutic Nutrition, Oxford and IBH publishers. 1990.
3. Swaminathan. M. Principles of Nutrition and Dietetics, BAPPCO publishers, Bangalore. 2003.
4. Gopalan, Balasubramaniam & Ramasastri Nutritive Value of Indian foods, NIN publication, Hyderabad. 1996.
5. Bhavana Sabarwal. Principles and practices of Dietetics, Ajay Verma common wealth publishers, New Delhi. 1999.
6. Davidson Passmore. Human Nutrition and Dietetics, London Churchill and Livingston publishers. 1989.

MSU/2017-18/UG colleges/Part III (B.Sc. Food Science & Nutrition)
Semester V/ 42/Major Practical VI

FOOD CHEMISTRY

Objectives

L T P C
0 0 8 4

1. Understand the meaning and chemical preparation of carbohydrates in foods
2. Explain the role of lipids and protein in foods
3. Acquire knowledge on the chemical changes occurring in foods

a. Determination of gluten content
b. Preparation of colloid, gel, foam, emulsion
c. Determination of acidity in flour
d. Determination of acid value and free fatty acids
e. Determination of peroxide value in fat and oil
f. Purity in fat and oil
g. Evaluation of milk samples

References

1. Miller D.D., Food Chemistry: A Laboratory Manual. Wiley Eastern Ltd., New York, 1998.
2. Damordaran, S. Parkin, K O. Fennema's Food Chemistry, Fennema Eds. CRC Press. 4th Edition, 2007.
3. Belitz.W. grosch. Food Chemistry. Springer Verley Belin Heidelberg, New York. 1986.
4. David. S. Robinson, Food biochemistry and Nutritive Value. Longman Group, U.K. 1987.
5. Leslie Hart.F and Harry Johnstone Fisher, Modern Food Analysis. Spinger – Verlag, New York. 1971.
6. Sadasivam.S.A, Manickam, Biochemical methods for agricultural sciences. New Age International Publishers. 1996.
7. Potter H.N: Food Science, the AV Publishing Co., Inc., Wet poet, Connectcut 1968.
8. John DeMan, Principles of Food Chemistry, 3rd Edition. Aspen Publishers, New York. 1999.

MSU/2017-18/UG colleges/Part II (B.Sc. Food Science & Nutrition) Semester VI/ Core

DIETETICS

Objectives

L T P C
5 0 0 4

1. To gain insight into the national nutritional problems and their implications
2. To obtain knowledge about the methods of assessment of nutritional status
3. Develop skills in organizing and evaluating nutrition projects in the community.

Unit I

Diseases of GIT

a. Diet in diseases of digestive tract – peptic ulcer, diarrhea and constipation

b. Diet in diseases of liver and biliary tract– hepatitis, cirrhosis, gall bladder diseases.

(15L)

Unit II

Febrile and Diabetes Mellitus

a. Diet in Febrile conditions, causes, types, metabolic changes, diet modification in Influenza, Malaria, typhoid, tuberculosis
b. Diet in Diabetes Mellitus – etiology, changes in metabolism, clinical symptoms, methods of treatment- diet, drug, complications and Food Exchange list. **(16L)**

Unit III

Cardiac disorders and allergy

a. Diet in Cardiac disorders: Atherosclerosis and hypertension, signs and symptoms, complications, diet modification.
b. Diet in food allergy- definition, classification, tests for allergy, diet modification. **(15L)**

Unit IV

Kidney diseases and burns

a. Diet in Kidney disease: glomerulonephritis, nephrosis, renal failure, urinary calculi- etiology, symptoms, dietary modifications.
b. Diet in burns -degrees of burns and diet management **(15L)**

Unit V

Obesity, Underweight and Cancer

a. Diet in obesity & underweight – causes, methods of diagnosis, dietary modifications
b. Diet in Cancer – types, clinical symptoms, and dietary management. **(14L)**

References

1. Sri Lakshmi, Dietetics, Wiley Eastern publishers. 2004.
2. Corrine Robinson, and Lawler. Normal and Therapeutic Nutrition, Oxford and IBH publishers. 1990.
3. Swaminathan. M. Principles of Nutrition and Dietetics, BAPPCO publishers, Bangalore. 2003.
4. Gopalan, Balasubramaniam and Ramasastri., Nutritive value of Indian foods, NIN publication, Hyderabad. 1996.
5. Bhavana Sabarwal. Principles and practices of Dietetics, Ajay verma common wealth publishers, New Delhi. 1999.
6. Davidson Passmore. Human Nutrition and Dietetics, London Churchill and Livingston publishers. 1989.

MSU/2017-18/UG colleges/Part I (B.Sc. Food Science & Nutrition) Semester VI/ Core

CLINICAL BIOCHEMISTRY

Objectives: **L T P C**

5 0 0 4

1. To study different tests for diseases
2. To know the biochemical composition of bloods and different parts of the body.

Unit I

Blood Sugar

Level of blood glucose in normal and abnormal conditions, Ketosis, Diabetic coma.

(15L)

Unit II

Inborn Errors of carbohydrate metabolism

Pentosuria, Galactosemia, Glucosuria, Glycogen storage diseases, Glucose tolerance test.

(15L)

Unit III

Blood Lipids

Types and level of lipids in blood disorder of lipoproteins – Hypo and Hypercholesterolemia, Atherosclerosis, Inborn errors of fat metabolism

(15L)

Unit IV

Plasma Protein

a. Plasma – Types, Functions
b. Inborn errors of amino acid metabolism – Phenylketonuria, Albinism, Alkaptonuria and Maple Syrup Urine Disease.

(13L)

Unit V

Gastric disorders

a. Bile Salt – Functions, formation of bile acids and bile salts, bile pigments from hemoglobin.

b. Tests for kidney function-clearance tests, dye and concentration tests

(17L)

References

1. Cantrow A and Trumper, Clinical Bio-Chemistry, M.W.B. Saunders co-1975.
2. Swaminathan, M. Bio-Chemistry for Medical teachers. BAPPCO publishers, Bangalore. 2001.
3. Reghuramulu, N. Nair, K.M., Kalyanasundaram, S.A., Manual of laboratory Techniques, National Institute of Nutrition, ICMR, Silver Prints, Hyderabad. 2nd ed. 2003.
4. Hoffman, W.W., The Biochemistry of Clinical Medicine, 4th Edition, Year Book Medical Publishers, 1970.
5. Varley H. Gowenlock. A. H. and Bell M. Practical clinical biochemistry. William Heinemann medical books limited. Vol. 1. 5th Ed., 1980.
6. Sadasivam, S. and Manickam, A., Biochemical Methods, New Age International Pvt. Ltd., Publishers, II edition, New Delhi. 1996.
7. Jayaraman, J. Laboratory Manual in Biochemistry, New Age International Ltd., Publishers, V Print. New Delhi. 1996.
8. Bhavana Sabarwal, Principles and Practices of Dietetics, Ajay Verma Common Wealth Publishers, New Delhi. 1999.

MSU/2017-18/UG colleges/Part III (B.Sc. Food Science & Nutrition)

Semester VI / Core paper XI

FUNDAMENTALS OF BAKING

Objectives: **L T P C**
5 0 0 4

This course will enable the students to

1. Understand basic concepts of baking
2. Acquaint with the role of various major and minor ingredients in bakery products
3. Familiarize with baking process and operations.
4. Learn the quality parameters of bakery products

Unit – I

Introduction

a) Introduction of baking
b) Principles of baking.
c) Equipment needed – ovens, dough mixer, egg beater.

(16L)

Unit -II

Role of ingredients in baking – I

a) Wheat
b) Fats and oils
c) Egg **(15L)**

Unit -III

Role of ingredients in baking-II

a) Milk, Sugar, Salt and Water
b) Flavoring agents
c) Leavening agents – physical, biological **(17L)**

Unit – IV

Preparation of bakery products-I

Preparation of cakes – rich cakes, plum cakes, pineapple upside cake. **(14L)**

Unit – V

Preparation of bakery products-II

Preparation of cookies, bread rolls. **(13L)**

References

1. Kent.N.L.: Technology of cereals – with special reference to wheat, pergamon Press, New York, USA. 1975.

2. France.W.J: The student Technology of Bread making and flour confectionery, Routledge and Kegan Paul Ltd., London, UK. 1974.

3. Sultan.W.J.: Practical baking manual – for students and instructors, AVI Publishing Co.INC, West Port, Connecticut. 1976.

4. Matz S.A.: Bakery Technology, packaging, nutrition, product development and quality assurance, Elsevier Science Publisher Ltd., New York, USA. 1989.

5. Malik. R.K. and Dhingra.K.C.: Technology of Bakery Industries. Small Industry Research Institute, New Delhi, India. 1981.

6. Pomeraz, Y.: Wheat Chemistry and Technology, Vol. 1 and II American Assn. of Cereal Chemists, 3rd Ed. St. Paul Minnesota, USA. 1988.

7. Matz. S.A. Technology for the Materials of Baking, Elsevier Science Publishers. Baking, England. 1989.

8. Yogambal and Ashok kumar, Theory of Bakery and Confectionary, PHT learning Private Limited, New Delhi. 2009.

MSU/2017-18/UG colleges/Part III (B.Sc. Food Science & Nutrition)
Semester VI / Major Elective – III (A)

FUNDAMENTALS OF TEXTILES AND CLOTHING

Objectives: **L T P C**
4 0 0 4

1. To understand, develop, and apply the major concepts related to clothing construction.
2. To provide a broad foundation of clothing design fundamentals and apply them to projects to meet individual needs.
3. To increase awareness of the economic and environmental influences on clothing decisions.
4. To provide opportunities to use the decision making process in clothing selections.

Unit I

a. **Fibers:**

Definition, classification, general characteristics of cellulose, protein, thermoplastic and mineral fibers.

b. **Major textile fibers**:
Manufacturing process, properties, use and care of textile fibers (eg) cotton, silk, rayon.

c. **Minor textile fibers** Study of minor fibers- jute, hemp, Coir. **(11L)**

Unit II

a. **Yarn construction:**
Definition, twist, types and counts.

b. **Fabric construction**
Weaving-definition, Types of weave-basic weaves – plain, twill, satin and decorative weaves (Jacquard weave). **(12L)**

Unit III

Fabric finishes

Definition: Boiling, scouring, sizing, carbonizing, bleaching, shearing, singering, calendaring, tendering, weighting, mercerizing. **(12L)**

Unit IV

Dyeing, Printing and Embroidery

a. Dyeing – initial dyeing – stock, yarn, piece, cross dyeing tie and dye, batik methods.
b. Printing – types block, stencil and screen.
c. Parts and function of sewing machines, use and care.
- Tools for clothing construction.
- Basic hand stitches.

d. Temporary – basting-even, uneven, diagonal.
e. Permanent – hemming, back stitch, whipping, overcasting, run stitch.

f. Embroidery – stem, chain, cross, bullion, lazy – Daisy, fly, wheel, couching, blanket. **(13L)**

Unit V

Seams, Neck Line, Plackets, Gathers, Fasteners, Bias.

a. Seams – definition, types.
b. Bias – uses, types.
c. Neck line – facing, binding, collar, Peter Pan collar.
d. Fasteners – Types, uses & disadvantages.
e. Plackets – uses, types.
f. Garment Constructions
g. Drafting – panty, A – line frock, six gore skirt, blouse. **(12L)**

References

1. Corbman B.P, Textiles fiber to fabric, International Mc Graw – Hill, Editions, 1983.
2. Gohl E.P.G. & L.D. Vilensky, Textile Science, 2nd edition, CBS Publishers and Distributors, New Delhi – 110002 (India), 1985.
3. Klein, W.D. Technology of spinning, Textile Institute, Manchester. 1998
4. Eric Oxtoby, Spun yarn Technology, Butter worth pub, U.K. 1987.
5. Shenai, V.A. Textile printing- Sevak publications, Mumbai. 1991.
6. Mary Mathews, Practical clothing construction – part I and II, cosmic Press, Chennai 1986.
7. Wingate I.B. Textile Fabrics and their selection, Allied publishers Pvt. Ltd., Chennai. 1990.
8. Dantyagi. S. Fundamental of Textiles and their care, Orient Longman Ltd., New Delhi, 1980.

MSU/2017-18/UG colleges/Part III B.Sc. Food Science & Nutrition) Semester VI / Major Elective - III (B)

CONCEPTS IN FAMILY RELATION

Objectives **L T P C**
4 0 0 4

1. To help them understand family values.
2. To orient students for adjustment in marriage.
3. To prepare them to play the roles of a wife and mother effectively.
4. To make them aware on the laws and rights of women.

Unit I
Marriage

a. Definition, purpose, functions, selection of spouse, physical, emotional, social, and intellectual maturity needed by the couple, areas of adjustment, factors influencing good marital adjustment.
b. Courtship and Engagement – significance in Indian context. **(12L)**

Unit II
Family

a. Definition, features, types of family and functions of family. **(11L)**

Unit III
Family Lifecycle

a. Stages in the family lifecycle **(12L)**

Unit IV
Critical Family Situations

a. Infidelity, desertion, divorce, alcoholism, death/suicide, disabilities. **(12L)**

Unit V
Family, Women and Law

a. Methods of family planning.
b. Laws pertaining to marriage
c. Women rights **(13L)**

References

1. Devadas R.P. and Jaya N. A Textbook on Child Development, Mac Millan, India ltd. 1984.
2. Rao C.N.S. the Family, S. Chand and Company Ltd., New Delhi. 1990.
3. Hurlock E.B., Developmental Psychology, Mc Graw Hill.1985.

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Semester VI / Major Practical VII

DIETETICS

Objectives **L T P C**
0 0 4 2

1. To gain insight into the national nutritional problems and their implications
2. To obtain knowledge about the methods of assessment of nutritional status
3. To develop skills in organizing and evaluating nutrition projects in the community.

Assessment and planning diet for

a. Diarrhea
b. Constipation
c. Peptic Ulcer
d. Fever
e. Typhoid
f. Tuberculosis
g. Underweight
h. Obesity
i. Diabetes Mellitus
j. Hypertension
k. Atherosclerosis
l. Hepatitis
m. Cirrhosis
n. Nephritis
o. Renal failure
p. Urinary Calculi

References

1. Sri Lakshmi, B. Dietetics, Wiley Eastern publishers. 2004
2. Corrine Robinson and Lawler. Normal and Therapeutic Nutrition, Oxford and IBH publishers. 1990
3. Swaminathan. M. Principles of Nutrition and Dietetics, BAPPCO publishers, Bangalore. 2003
4. Gopalan & Ramasastri Nutritive value of Indian foods, NIN publication, Hyderabad. 1996
5. Bhavana Sabarwal. Principles and practices of Dietetics, Ajay Verma Common Wealth Publishers, New Delhi. 1999
6. Davidson Passmore. Human Nutrition and Dietetics, London Churchill and Livingston publishers. 1989.
7. Williams S. R.: Essentials of Nutrition and Diet Therapy, 4th ed., Mosby College Pub. S. Louis, 1986.

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Group Project	**L T P C**
	0 0 7 7

Students are encouraged to work on Mini group projects to get acquaintance to real life problem solving and hands -on experience. The outcomes of the projects would be submitted as report and viva voce shall be conducted for individual student and not in a group.